TECHNICAL WORK MAY NOT BEGIN PRIOR TO CO APPROVAL

NASA/GODDARD SPACE FLIGHT CENTER

REQUEST FOR TASK PLAN / TASK ORDER

CONTRACTOR	CONTRACT NO./TASK NO.	JOB ORDER NUMBER	APPROP FY
QSS Group, Inc.	NAS5- 99124 TASK NO. 51 AMENDMENT	410-287-12-21-89	99

TASK TITLE: (NTE 80 characters; include Project name)

MAP Systems Engineering Services

APPROVALS (Type or print name and sign)

	DATE	ORG CODE	MAIL CODE	PHONE
ASSISTANT TECHNICAL REPRESENTATIVE (OR TASK MONITOR) Elizabeth Citrin Elizabeth C. Citrin	4/22/99	730.3	410.2	301-286-8552
BRANCH HEAD Eric Isaac Eric Isaac	4/28/99	CODE 730		PHONE 301-286-6409
CONTRACTING OFFICER'S TECHNICAL REPRESENTATIVE (COTR) for Fred Huegel Deborah A. Clark	4/29/99	CODE 568		PHONE 301-286-2285

FLIGHT HARDWARE, CRITICAL GSE OR SOFTWARE? (IF YES, NEED CODE 303 CONCURRENCE NEXT BLOCK)	CONTRACTING OFFICER'S QUALITY REP.	DESIGNATED FAM:
[ ] NO [X] YES	DIC for L. Moore per 4/29 email Larry Moore	Mike Delmont

The contractor shall identify and explain the reason for any deviations, exceptions, or conditional assumptions taken with respect to this Task Order or to any of the technical requirements of the Task Order Statement of Work and related specifications. The contractor shall complete and submit the required Reps and Certs.

(To be completed by Contracting Officer)
C.O. Requested Quote on:
Date: MAY - 3 1999

Contractor will develop specification or statement of work under this task for a future procurement. [X] NO [ ] YES

Flight hardware will be shipped to GSFC for testing prior to final delivery. [X] NO [ ] YES [ ] N/A

Government Furnished Property/Facilities: [X] NO [ ] YES -- SEE LIST OF GFP (offsite only) / FACILITIES (onsite only)

Onsite Performance: [ ] NO [X] YES If yes: [ ] TOTAL [ ] PARTIAL
If partial, indicate onsite work in SOW by asterisk (*)

Surveillance Plan Attached: [X] NO [ ] YES

Highlighted Contract Clauses: *(to be completed by Contracting Officer)*

Per Clause H.14, Task Ordering Procedure, subparagraph (f), the effective date of this task order shall be May 3, 1999

INCENTIVE FEE STRUCTURE (check one)
(See Contract NAS5-99124, Attachment K, Incentive Fee Plan)

	___ No. 1	___ No. 2	___ No. 3	___ No. 4	_X_ No. 5
Cost	10%	50%	25%	25%	5%
Schedule	15%	25%	25%	50%	5%
Technical	75%	25%	50%	25%	90%

(To be completed by Contracting Officer)

The target cost of this task order is $ 529,826 .
The target fee of this task order is $ 11,800 .
The total target cost and target fee of this task order as contemplated by the Incentive Fee clause of this contract is $ 541,626 .

The maximum fee is $ 17,246 .
The minimum fee is $0.

AUTHORIZED SIGNATURE:

THIS TASK ASSIGNMENT IS ISSUED ACCORDING TO THE CONTRACT CLAUSE "TASK ASSIGNMENTS AND REPORTS"

Lorrie L. Eakin — 2/17/00 — Lorrie L. Eakin, Contracting Officer

SIGNATURE OF CONTRACTING OFFICER — DATE — TYPED NAME OF CONTRACTING OFFICER

CONTRACTOR'S ACCEPTANCE:

AUTHORIZED SIGNATURE — DATE

OBSOLETE

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Applicable paragraphs from contract Statement of Work: Functions 2B and 2D

STATEMENT OF WORK: (Continue on blank paper if additional space is required)

I. Senior Mission System Engineering

The contractor shall provide Senior Mission Systems Engineering services for the Microwave Anisotropy Probe (MAP) mission. The MAP mission is in the integration and test phase and will launch next year. The contractor shall serve as members of the MAP systems engineering team, with responsibility for requirements analysis, requirements verification, anomaly investigation, failure analysis, reliability analysis, circuit analysis, operational health and safety design, telemetry allocation, interface analysis, power budget analysis, test plan and procedure development, observatory-level thermal vacuum test direction and other systems engineering activities. The contractor will perform comprehensive systems engineering services for the mission through the first few months of on-orbit operation including trouble-shooting of on-orbit anomalies and establishment of normal operations at the L2 Lagrange point. Extended hours and workweek are required consistent with integration, test and operational phases of spaceflight projects.

The following specific activities are required:

a. Manage observatory telemetry and command database. Analyze telemetry requirements and modify allocations accordingly.

b. Investigate system, instrument, spacecraft subsystem, component, board and part level anomalies and present comprehensive and thoroughly analyzed recommendations for corrective action.

(continued)

PERFORMANCE SPECIFICATIONS:
All activities involving flight hardware and critical GSE shall be in compliance with and adhere to the procedures specified in the MAP Quality Manual, MAP-MSN-MGMT-22 and appendices thereto. All documentation shall be configured in accordance with the MAP Configuration Management Plan, MAP-MSN-MGMT-21.

APPLICABLE DOCUMENTS:
MAP Mission Requirements, MAP-MSN-SPEC-1, MAP Quality Manual, MAP-MSN-MGMT-22, and appendices thereto. MAP Configuration Management Plan, MAP-MSB-MGMT-21.

TASK END DATE: 3/30/00

MILESTONES/DELIVERABLES AND DATES:
Telemetry and Command Handbook 3.2 -- updates with each FSW release -- 6/30/99, 9/30/99, 12/30/99
Input files for Telemetry and Command Database for FSW load 3.2; updates with each release -- 6/30/99, 9/30/99, 12/30/99
Inputs to MAP Contingency Plans -- 5/15/99, 7/15/99, 12/15/99, 3/15/00
MAP Power System Operations Guide -- 6/30/99
PSE Hardware/Software Model and Analysis Results -- 5/30/99
Development and Execution of Subsystem and System Procedures for CPT's, End-to-End Tests, Mission Simulations -- 5/15/99, 12/30/99
Subsystem and System Preliminary Trend Data List -- 7/1/99
Subsystem and System Trend Data Analysis -- Ongoing, update after each CPT -- within 1 month of major test (CPT, mission simulation, end-to-end) completion
Test reports for Subsystem and System Functional and Performance Tests, Observatory CPTs, and End-to-End Tests -- 5/15/99, 6/30/99, 9/30/99, 12/30/99, 3/30/00
Preliminary CPT Plan Inputs -- 5/15/99
Final CPT Inputs and Plan -- 6/15/99
Preliminary and Updates to Observatory Validation Matrix -- 7/15/99, 9/15/99, 12/15/99, 3/15/00
Preliminary Thermal Vacuum Test Plan -- 8/30/99
Thermal Vacuum Procedure Development -- 12/30/99
Observatory Thermal Vacuum Test Report -- 3/30/00
MAP Health and Safety Documentation -- Preliminary 6/30/99; Update 12/30/99; Final 3/30/00

PERFORMANCE STANDARDS:
Schedule: On-time delivery of specified products
Technical: ATR review and acceptance of deliverables

FINAL DELIVERY DESTINATION (NAME, BLDG, ROOM):
Liz Citrin, building 15, room 216

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STATEMENT OF WORK: (Continued)

c. Lead launch and on-orbit contingency planning activities in concert with the Operations Manager.

d. Develop and obtain mission management approval for health and safety, failure detection and correction approaches.

e. As a key member of the MAP Failure Review Board, the contractor shall ensure mission management is fully aware of all potential anomalies and is provided timely options to ensure the highest level of science objectives are met and exceeded.

f. Participate as a key member and senior engineering analyst of the MAP EMI Board.

g. Develop the MAP Spacecraft and Instrument Comprehensive Test Plan (CPT), participate in the CPT and provide test reports. As senior systems engineer, analyze test results and provide detailed comprehensive and timely report of analysis, develop ad hoc follow-on testing, if needed, and provide a timely and comprehensive analysis of risk assessment and trades.

h. Serve as the Technical Test Director for the MAP Observatory Thermal Vacuum Test including end-to-end testing, instrument and spacecraft comprehensive performance testing, mission simulations, and anomaly investigation.

i. Review Autonomous Star Tracker software design and operations concept for compatibility with MAP requirements.

j. Act as the process owner for MAP reliability process. Identify and maintain mission management reliability analysis in all areas of the instrument and spacecraft and provide to mission management comprehensive options to reduce identified risks.

k. Review and provide inputs to the Launch Site Support Plan and Delta Mission Specification.

II. Senior Spacecraft System Engineering

The contractor shall provide Senior Spacecraft Engineering services for the mission. The contractor shall be key members of the spacecraft integration effort, and shall follow the spacecraft into observatory integration and test, and launch preparation and launch site support activities, and on-orbit checkout. The contractor shall provide input to and review subsystem integration and test plans and procedures, shall participate in and provide services to some subsystem integration and test activities. The contractor shall be responsible for portions of system level test plans and procedures (CPT, mission simulations, end-to-end tests, observatory thermal vacuum), and shall participate in the execution of the activities. The contractor shall also be responsible for test reports and validation documentation. The contractor shall have overall knowledge of spacecraft ground support equipment (GSE) requirements and operations, especially power subsystem GSE.

a. Analyze the MAP power budget allocations against measured values and refined operational sequences and modify the budget accordingly. Identify technical issues and options for resolution based on experience with space flight mission power system operating characteristics and MAP unique mission characteristics.

b. Perform detailed assessment, based on comprehensive understanding of total life cycle spacecraft power requirements, specific system design, and system integration design of each power subsystem engineering decision. Utilizing this analysis, identify critical decision points, engineering tradeoffs, and optimum solution based on cost, total system performance and effect on life cycle mission accomplishment.

c. Identify critical engineering and integration design characteristics, decisions and processes that will impact the power system and the spacecraft ability to meet full performance objectives through the life cycle.

d. Participate in contingency planning activities. Identify likely failure paths based on knowledge of the systems involved and identify and document trouble shooting and recovery options.

e. Provide circuit analyses and modeling for MAP power system and control software. Maintain the power system models to remain current with any changes.

f. Serve on the MAP EMI Board. Analyze system performance based observed exceedences and make recommendations for solutions.

g. Review and generate inputs to MAP subsystem integration, functional and performance test procedures for box integration to the spacecraft. Participate in the integration activities.

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STATEMENT OF WORK: (Continued)

h. Participate in launch site and launch vehicle interface activities.

I. Analyze GSE configurations for all ground system activities (integration and test at the Goddard Space Flight Center, Kennedy Space Center facilities and launch pad) and assure flight hardware safety and nominal performance.